

RE: AM-based JEM strategy

Brattin, Bill to: Benson.Bob, Berry.David

06/18/2012 06:32 AM

From: "Brattin, Bill" <brattin@srcinc.com>

To:

Bob

Here is a file where I added a sheet (see "Conc vs Duration") that plots observed concentration vs sampling duration.

I think we do have an issue for trionize, track unload and probably track.

Lets discuss today

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-----Original Message-----

From: Bob Benson [mailto:Benson.Bob@epamail.epa.gov]

Sent: Sunday, June 17, 2012 3:45 PM

To: Brattin, Bill; David Berry

Subject: RE: AM-based JEM strategy

Call me when the US Mag meeting is over. We can meet in the Conference Center for a short time like we did before and get you on your way home.

I will spend more time reviewing your approach. I think we are very close to something we can all agree with.

We need to talk about the IH data and decide whether there is any evidence of bias. I suspect Danielle will want to pick apart each sample before she lets loose of her issue.

-----"Brattin, Bill" <brattin@srcinc.com> wrote: -----

To: Bob Benson/R8/USEPA/US@EPA

From: "Brattin, Bill" <brattin@srcinc.com>

Date: 06/17/2012 12:07PM

Subject: RE: AM-based JEM strategy

I have a US Mag meeting at EPA on Monday AM Can we either talk before (e.g., from 8:00 to 8:30 AM), or I can call you after the USMag meeting (perhaps 11:00-12:00).

I need to leave for home no later than about 1:30 to meet someone who is going to repair my computer.

Here is the situation as I see it:

1) It seems pretty clear that they (UC team) just want EPA to tell them what to do.

I am trying to get them to engage in meaningful discussions so we can be sure we select the best approach.

2) Because the last e-mail from Tim said "Send us the table you want us to use", I went ahead and created the proposal I sent out to everyone.

I did not use a linear fitting approach like you did (and they did), because a) a linear fit in linear space would have to be segmented in arbitrary places to avoid going below zero, and b) a linear fit in log space (like they did) is non-linear in linear space.

3) I think you will be able to tell if I adjusted for vermiculite source correctly, at least after I walk you through what I did. The question about engineering controls has me a little confused. Workers said that dust levels were twice as high in the past as in 1972, and this assumption is built into the back-extrapolation for trionizing.

Presumably the reason is that process or engineering controls were added between 1957 and 1972 .

The assumption is that these engineering controls did not impact the track operations (from 1957 to 1972), so no doubling of exposure in the track area is used in the back extrapolation.

Here is the issue: Between 1972 and 1984, there was a downward trend in both trionizing and track (even though any changes in trionizing would presumably not have impacted track). If the logic does apply to 1972 -1984, maybe it does not apply for 1952-1974??? This is not a big issue to me, especially if SAB does not raise any questions.

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-----Original Message-----

From: Bob Benson [mailto:Benson.Bob@epamail.epa.gov]

Sent: Friday, June 15, 2012 11:28 PM

To: Brattin, Bill

Subject: Re: AM-based JEM strategy

After a five minute review on my return from DC tonight, this looks like a reasonable approach. I will review in more detail over the

weekend. We should talk on Monday. I noted a somewhat tangled message from Grace LeMasters. I think she meant to say that UC will review the approach and offer comments. Your approach is somewhat more complicated than the approach I used, but it has a great advantage that it does not allow the less than zero problem that I found. I have not had time to compare the values, but will do so before Monday.

The issue about engineering controls not affecting the values for track expander and track unload only applies to the time period between 1957 and 1972 when no IH data are available. In 1972 and later only actual IH data were used. I don't see an alternative to using the IH data as is after 1972 for all areas in the facility. Did you see any evidence of bias resulting from the different sampling times for the IH data. I only forwarded the data to Danielle without looking at it during my trip (perhaps a mistake). I will look at it in more detail before Monday.

Were you able to locate all the values that were based on 1/2 LOD and set them equal to 0 before you did the fitting exercise? I assume so otherwise you probably would not have proceeded.

I will be in the office only Monday and Tuesday. I leave for vacation in Switzerland on June 20 and will return to the office on June 28.

-----"Brattin, Bill" <brattin@srcinc.com> wrote: -----

To: "Hilbert, Timothy (hilbertj)" <HILBERTJ@UCMAIL.UC.EDU>, Bob Benson/R8/USEPA/US@EPA, David Berry/R8/USEPA/US@EPA

From: "Brattin, Bill" <brattin@srcinc.com>

Date: 06/15/2012 08:43AM

Cc: "Borton, Eric (bortonek)" <BORTONEK@UCMAIL.UC.EDU>, "Rice, Carol (ricech)" <ricech@ucmail.uc.edu>, "Lemasters, Grace (lemastgj)" <LEMASTGJ@ucmail.uc.edu>, "Lockey, James (lockeyje)" <lockeyje@UCMAIL.UC.EDU>

Subject: AM-based JEM strategy

Here is an Excel spreadsheet that offers one potential approach to fitting and extrapolating concentration values by year by area to generate the JEM based on un-transformed data.

This is intended to be just a starting point for discussion, and should not be confused with a decision or even a recommendation.

In brief, here is what I did:

Step 1: Fit the IH data from 1972-1994.

I used a simple exponential model: $y = a \cdot \exp(-bx)$, and fit the model to the data using minimization of square errors.

This model has the advantage that it can not go below zero, and it can take on a nearly linear form (if the data suggest that is appropriate).

I did not investigate other models, although it seems likely that

other modeling strategies might be appropriate.

I first fit the data for each area independently, then I fit the data for all area simultaneously (assuming a constant b for all areas).

This approach would make sense if the rates of decrease over time were generally similar between areas.

[Note: Appendix F says that engineering changes in the trionizing area to reduce dust levels are not expected to impact the tract area.

However, the concentrations in the track and track unload areas appear to tend to decrease between 1972 and 1980. If so, why is this?]

Step 2: Extrapolate back in Time

Next, I used the model-predicted value for 1972 to extrapolate backward to 1957.

I did this both for the simultaneous fit (JEM-1) and for the 4 independent fit(JEM-2) approaches.

I tried to do this extrapolation in the same way as described in Appendix F, although I am not sure I did this correctly.

Step 3: Extrapolate ahead in time

For the interval from 1994 to 2000, I just let the model predict the values (forward extrapolation).

Alternatively, we could just use the model value from 1994 and hold them constant (as was done in Appendix F).

Not much difference either way.

Please review and send comments when possible.

Then, lets follow up with a conference call to resolve issues and choose the best plan.

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[attachment "Draft JEM Based on AM Values v1.xlsx" removed by Bob Benson/R8/USEPA/US]



- Fiber Samples LOD set to zero 914 06132012.xlsx